An Essay (1) 1808 NO 2

on

Investigation of the different opinions in favour of the contagious nature of Remittent and intermittent Fevers, together with an inquiry into the laws of miasma &c

By

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An
Inaugural Dissertation
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The Degree
of
Doctor of Medicine
Submitted
To the examination of
John Mc Dowel LL D Provost
The
Trustees and Medical Professors
of the
University of Pennsylvania
on the twenty seventh day of April
1808

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Perhaps no subject, among the many which have agitated the medical world, has excited greater attention & dispution, than that of Contagion. Such is the disposition of man to attribute effects to causes of an obscure & unknown nature, that Physicians of the Lesser-enlightened age, have imputed all that class of diseases, a knowledge of the causes of which, involved some difficulties, to one common source, contagion. On this subject we find the conceiving opinions, of Zimmerman, Rodgers, Lancisi, Lind of Windsor, Cleghorn, & Clark. From each of whom, my business here, as one writing in obedience to the Laws of a University, shall be, to make a few quotations, together with an

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1st Dr. Zimmerman, observes, "that putrid fevers are produced by exhalations from putrid animal substances, & that a malignant fever was produced by a small heap of Flax, which proved fatal to the Family in which it commenced, & afterwards spread its contagion thro' the whole Country."— In this author we find a position, substituted for both correct reasoning & incontrovertible fact.— He asserts, "that its contagion spread thro' a whole County", but omits telling us whether the inhabitants of this county were exposed individually to the influence of this contagion, or whether its ravages were commenced at the same time on numbers, who had not come within the limits, consigned to the influence of contagion.— Dr. Hagarth's experiments on the contagion of small pox, are sufficient to answer

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2d. By Dr. Rogers, epidemic, appear to have been mistaken for contagious Fevers.— His words are, "The Fevers which ravage annually at Cork are owing to the exhalation of putrid blood from Slaughter Houses, particularly after the summer rains"— In answer to this, 'tis only necessary to consider the regular periods at which those diseases appeared & disappeared, together with their place of attack.— If in the first place, they arose from a contagious source, why did they not make their appearance at all or any seasons of the year? Would they have been accompanied only by the approach of Fall & removed by that of Winter? Would they also not have commenced their attack upon the Butchers, who of necessity were most exposed to their source? Yet the very reverse, of this, we find to be the fact

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for those men were either not affected at all or at a time when the disease had made its appearance generally.

3d. Lancisi, has asserted that a part of Rome was depopulated by a Fever which originated from the putrid effluvia of Horses Litter &c. So fully has this opinion been refuted by Dr. Rush, in the 2d. Vol. of the American Philosophical Transactions, that it would be presumptuous in me, here to attempt any thing further.

4th. So indefinite is Dr. Linde, that his precise ideas, appear difficultly, if at all comprehended. If I do not misconstrue them, his opinion was, that those diseases were originally produced by contagion, but that they were greatly aggravated by an unhealthy disposition in the atmosphere. His words are many as follow, "Tho' this Fever may proceed from Vegitable exhalation, it

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is greatly aggravated by a peculiar unhealthfulness of the air, & hence may spread it's contagion." On the mind of this author, (whose research & observation were worthy of admiration) the light of truth appears to have dawned; but so forcibly had the bias of popular opinion made it's impression, that it was not in a moment to be erased. Hence is to be drawn an evidence greatly opposed to the then prevailing opinion. We find this author notwithstanding his prejudices, resorting to the atmosphere as one of the agents in the production of this Fever, & why? Must not the truth of observation have armed itself with doubly agent powers, to have even thus far, flashed conviction, where bias had exercised it's sway.

5th. Dr. Cleghorn, has asserted "that Tertians may as properly be called contagious as the

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Measles or Small pox". But as he gives only bare & unsupported assertion, there is no ground upon which to found an opinion. I shall therefore dismiss him as one from whom neither good nor evil can result. — —

6th "Dr. Clark, who has taken a decided part in the cause of contagion, asserts, "that every variety or form of Fever, belongs to the same genus & arises from one & the same cause, viz. contagion". In support of which he has adduced the following facts.

1st "That the Greenville Indiaman, which touched at the Island of Java, suffered greatly from the malignaty of the air. When the Ship sailed from Battavia a few on board were taken ill of a malignant fever, which, at sea, spread by contagion, & carried off great numbers. I visited several, (continues he) after she arrived

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at China, who were reduced to mere Skeletons by the duration of the Fever & Dysentery, both of which were most certainly propagated by contagion" –

1st Agreeably to Dr. Clark's own statement, he was not on board the Vessel during her passage, & consequently, could not have had an opportunity of ascertaining that the disease did spread by contagion –

2d We are informed by Dr. Lind in his Treatise on Diseases of hot climates, "that a person may be attacked by a fever several days after exposure to exhalations from marshy grounds – He has ascertained, by comparing many cases of persons, who had slept on Shore during the sickly season, & who out of the whole Ships Crew, were alone affected after returning to the Vessel, which lay in an open road, that some

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were immediately seized with sickness or Delirium, many not for two or three days after being on board, & in some the symptoms of indisposition did not appear for ten or twelve days" — By these experiments it is plainly proved, that an impression made by the remote cause of a disease, may not discover itself for some time after the cause itself has been abstracted — This is still farther illustrated by Dr. Jackson in his treatise on the Intermitting fever of America. "He informs us that Fevers arising from the air of Marshes, seldom if ever make their appearance in less than seven days after such exposure, & that some have passed as many as twenty days before the disease was completely formed" — Dr. He (Clark) relates the case of an old Lady who being affected with palsy, lived up three

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pain of Stairs, in a situation where no Marsh Miasma could reach her, & who, being taken with an Intermittent Fever, must have derived it from contagion." As an answer will be most conveniently given, to this last case, in the sequel I shall reserve it for that place.

Having heretofore been engaged in an attempt to investigate a few of those opinions which have been advanced in support of Contagionists it now becomes necessary that I should give a definition both of contagion & Miasma. With this view, I shall in the first place explain what I understand by contagion, & in the second attempt to define Miasma together with the Laws which it appears to observe in its circulation thro' our atmosphere.

1st. Contagion, (from Contingo L.) is a fluid secreted by a diseased body, which fluid

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or humor when applied to a healthy body, has the power, of producing therein, the same form of disease, with which the body from whence it originated, was affected. From this definition it is at once discovered that I believe an immediate contact between a healthy & diseased body, necessary to the propagation of contagious diseases. Against this it may be urged that the smallpox has been communicated thro' the medium of the atmosphere, or without any direct contact between the healthy & diseased bodies. To this I will answer that the matter of the smallpox being possessed of great volatility, may for a certain distance so strongly impregnate, by the evaporation of its more aqueous principles, the surrounding atmosphere, as to take effect on those who may be exposed

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to it. Dr. Hagarth in his experiments on this subject, has proved that its contagion can not be communicated beyond the distance of six feet.

Here a question naturally arises, how or by what power is it, that this matter of contagion produces & reproduces the same disease? Is it by a power specifically its own, which, independently of all or any cooperating causes, excites in the system this specific action? Or is it from the impression thus made that the system is thrown into a state of predisposition, which, when acted upon, by ordinary stimuli, is converted into an action corresponding with that induced by the predisposing cause? Here our subject involves great perplexity & doubt, but for its better elucidation I will state

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the following case. I suppose a person inoculated for the small-pox, at a time when the yellow fever or any violent epidemic was prevailing; I suppose also that the patient after being predisposed by the action of the small pox matter, was exposed to that of the cause of this epidemic, should we not, was the stimulus of the latter greater than that of the former, have a disease partaking of the form of the prevailing epidemic rather than of that of the small pox? But experience has proved the very reverse to be the fact, for I believe that on the records of medicine there does not stand an instance in which inoculation for the small pox has been succeeded by a disease other than the small pox. If then this be the case what must be

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our conclusion, but that the matter of contagion when applied to the system, first makes an impression, which may be considered as the disposition, that the virus otile being present & continuing to act, overcomes all action from other causes & thus produces a disease the same in form, with that from which this virus was taken.

2d. Miasmes, "from Inquino". This term is of ancient date; it was introduced about the time of Galen & used to express the circulation of the particles of matter, which by minute mechanical division, were reduced to a gravity less than that of the atmosphere. But since that remote era the constitution of permanently elastic fluids has been explored; the volatilization & solution of bodies by heat, has been

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investigated, & the weight of Areae composition detected, which from their transparency elude all examination by the eye. Hence, the term is now applied to a certain matter or principle of matter, which from an intestine alteration or decomposition of the constituent principles of bodies, forms a combination with calorie, is thrown into the elastic aeriform state, & thus insinuates itself thro' the medium of our atmosphere. If then Miasma is to be considered as an Aeriform fluid, as one originating from & existing only during it's combination with so much heat as is necessary to support it in that state, may we not with propriety ask, what are the differences, the laws, which govern this & other aeriform fluids? Are they alike subject

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to condensation or a privation of that heat with which they are combined & by which they are sup-
-ported, from being exposed to a medium greater in density than that in which they originated. I appeal in the first place to the uniformity of nature's laws for an answer.
But let the subject not rest here, let it come before the test of observation, for unfortunately it can not before that of experiment. For this purpose I will cite the following observations which were made in the autumn of 1805.
Winchester in Virginia, is situated on very low ground, which is interspersed with marshes, [illegible], & surrounded on all sides by hills of considerable height, many of which are inhabited & kept in a highly ornamented state, such as render them in-

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-viting retreats, from the heat & unhealthiness of Summer - In the Fall of 1805 the Inhabi-tants of the Town were unusually healthy, whilst those of the above discribed hills, were so much afflicted, with a fever, as to be obli-ged to retreat to the Town for protection, in which they found a secure asylum - This Fever was endemic, & assumed different forms, tho" in all partaking somewhat of the Intermittent type - If, "as I suppose will be admitted, as there was no other probable cause", this fever was the product of marsh exhalation, upon what principle is to be explained its taking effect on & on those situated on eminences? Why did it not affect the Inhabitants of the Town, in a man-ner at least equal to that, in which it did, those of the higher grounds? Would it not

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seem most probable that it's attack would have been first made on those nearest it's source? But since we find probability combated by fact we must look still farther, & seek what is to be found in inferences & reason from established principles. With this view, let us examine the laws which govern that vapor, from which the evening dew is produced, from it's elimination to it's condensation. This vapor which is the effect of the heat of day acting upon the moisture of our Earth, & which when in that state, escapes insensibly by us, we find affecting us in a manner perceptible to most of the senses, when condensed & precipitated by the depression of temperature of evening. If then Miasma is simply an aeiform fluid, if it is subject to the same revolutions with other aeiform

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fluids, which depend upon their greater or
lesser combination with heat; may not
it's Laws be reduced to the following? —
That, when it is eliminated from a collec-
tion of Matter, which is in a state of pres-
-tifaction, from being greatly rarified, it
may be considered as in a state of dilution
which renders it incapable of acting on
those exposed to it. But, that, when it has
ascended, & comes in contact with a medi-
-um too dense, for it's further existance
in the Aeriform state; it becomes conden-
-sed & precipitated in a state of such con-
-centration as to act on those persons
who may then be exposed to it. These are
the principles upon which, I would explain
the fact relative to the Fever which prevailed
near Winchester as also that related by

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Dr. Clark, of an old Lady, who, was taken with an Intermittent fever, tho' confined up three flair of Stairs & as he supposed without the reach of Miasma.

Having thus brot to a conclusion, a crude & imperfect essay, it would be offering violence to my feelings, not to express the divcest sentiments of gratitude, to the Professors in this University, for the many advantages which I have derived from their industry & Labors, & that their exertions for the investigation of truth & removal of error, may be crowned with the greatest success, is the anxious desire of their most obliged & humble Servant &c